CLAIMS

What is claimed is:

1. An isolated polypeptide comprising an amino acid sequence having at least 85%% identity to the amino acid sequence set forth in SEQ. ID. NO. 2, said isolated polypeptide being a functional equivalent of ERCoA3.

2. The isolated polypeptide of claim 1 wherein said polypeptide interacts with a ligand-bound estrogen receptor (ER), and wherein interaction of the isolated polypeptide with said ligand-bound ER causes activation of said ligand-bound ER.

3. The isolated polypeptide of claim 1 wherein said polypeptide interacts with human progesterone, and wherein interaction of the isolated polypeptide with said progesterone receptor causes activation of said progesterone receptor.

4. The isolated polypeptide polypeptide of claim 1, wherein said polypeptide decreases the ability of tamoxifen to inhibit proliferation of ER-positive tumor cells.

5. An isolated polynucleotide comprising a sequence selected from the group consisting of:

(a) a nucleic acid sequence of at least 200 nucleotides which is a portion of SEQ ID NO:1 or the complement thereof; and,

(b) a nucleic acid sequence of at least 200 nucleotides which hybridizes to SEQ ID NO:1 or the complement thereof, under stringent conditions.

6. The isolated polynucleotide of claim 5, wherein said polynucleotide comprises a nucleic acid sequence which encodes a polypeptide comprising an amino acid sequence which is at least 85% identical to SEQ ID NO. 2.

7. The isolated polynucleotide of claim 5, wherein the nucleic acid comprises part of an expression vector, a viral genome, or a liposome.

8. An isolated polynucleotide for inhibiting translation of an mRNA which encodes SEQ ID NO. 2, said polynucleotide being at least 8 nucleotides in length and comprising a sequence which is complementary to a portion or all of the nucleic acid sequence set forth in SEQ. ID. NO. 1

9. A primer set for amplifying an ERCoA3 transcript, said primer set comprising a first primer comprising a sequence which is identical to a first contiguous sequence in SEQ ID NO.1, and a second primer comprising a sequence which is complementary to a second contiguous sequence in SEQ ID NO. 1, wherein said second contiguous sequence is downstream of said first contiguous sequence.

10. The primer set of claim 25 wherein said first primer and said second primer each are at least 10 nucleotides in length.

11. An antibody which binds to one or more epitopes in human ERCoA3 protein, wherein said ErcoA3 protein comprises SEQ ID NO. 2.

12. The antibody of claim 11 wherein said antibody is a monoclonal antibody.

13. A method of inhibiting or reducing tamoxifen or estrogen induced proliferation of cancer cells, comprising reducing the activity of ERCoA3 in said cancer cells.

14. The method of claim 13 wherein said cancer cells are selected from the group consisting of breast cancer cells, endometrial cancer cells, and uterine cancer cells,

15. The method of claim 13 wherein the activity of ERCoA3 is reduced in said cancer cells by introducing into said cell an antisense nucleic acid sequence for inhibiting translation of mRNA molecules which encode SEQ ID NO. 2, said antisense nucleic acid sequence being at least 8 nucleotides in length and comprising a sequence which is complementary to a portion or all of the nucleic acid sequence set forth in SEQ. ID. NO. 1

16. The method of claim 15, wherein the antisense nucleic acid sequence is introduced into the cell by a vector, a virus, or a liposome.

17. The method of claim 15 wherein the activity of ErcoA3 is reduced in said cancer cells by contacting the cells with anti-ERCoA antibody under conditions which permit uptake of said antibody

18. A method of detecting cancerous cells that are tamoxifien resistant , comprising :

a) contacting a test sample which comprises cancerous cells or a protein extract therefrom with anti-ERCoA3 antibody under conditions wherein binding of said antibody to ERCoA3 protein occurs; and

b) assaying for a complex between the antibody and a protein in the test sample, wherein an increase in the level of the antigen-antibody complex in the test sample, as compared to the level of the antigen-antibody complex in a control sample, indicates that the test sample contains or was derived from tamoxifen resistant cancerous cells.

19. A method of detecting cancerous cells that are tamoxifien resistant, comprising:

assaying for ERCoA3 transcript in a test sample which comprises cancer cells or an RNA extract of said cells, wherein a increase in the level of said ErcoA3 transcript in said test sample, as compared to the level of said ERCoA3 in a corresponding control sample, indicates that the test sample contains or was derived from tamoxifen resistant cancer cells.

20. The method of claim 19 wherein said sample is assayed by contacting said sample with a polynucleotide which is complementary to a contiguous sequence in SEQ ID NO.1 under stringent hybridization conditions.

21. The method of claim 19 wherein said sample is assayed by a reverse-transcriptase polymerase chain reaction which employs a primer derived from SEQ ID NO. 1.

23. A method for treating osteoporosis in a subject comprising:

increasing the levels of ERCoA in the estrogen-responsive cells of the subject.